Claims:

1. A preparation comprising a population of red blood cell extracellular vesicles (RBCEVs) loaded with a DNA cargo and a cationic reagent, wherein:

the RBCEVs have a size between 50 nm and 1,000 nm in diameter,

the DNA cargo has a length between 2,000 bases and 40,000 bases;

the cationic reagent complexes with nucleic acids and is selected from the group consisting of cationic lipid reagents and cationic polymers;

and further wherein the preparation is characterized in that:

when the preparation is contacted with recipient mammalian cells, it is more effective at transfecting the mammalian cells with the DNA cargo than is an otherwise comparable reference preparation loaded by electroporation.

2. The preparation of claim 1 characterized in that, when contacted with recipient mammalian cells, it achieves transfection of more than 50% of the mammalian cells.

3. The preparation of claim 1 characterized in that it is at least twice as effective at transfecting the mammalian cells than is the reference preparation.

4. The preparation of claim 1, further characterized in that, when contacted with recipient mammalian cells, it transfects more cells than does an otherwise comparable reference preparation loaded with an RNA cargo, rather than the DNA cargo, and the cationic reagent.

5. The preparation of claim 1, wherein the DNA cargo is single-stranded (ssDNA).

6. The preparation of claim 1, wherein the DNA cargo is double-stranded (dsDNA) and has a length between 1,000 base pairs and 20,000 base pairs.

7. The preparation of claim 1, wherein the DNA cargo is an expression vector comprising a transgene encoding a protein or peptide.

8. The preparation of claim 1, wherein the DNA cargo is circular.

9. The preparation of claim 1, wherein the DNA cargo is a minicircle or plasmid.

10. The preparation of claim 1, wherein the DNA cargo is linear.

11. The preparation of claim 1, wherein the DNA cargo is loaded in the lumen of the RBCEVs.

12. The preparation of claim 1, wherein the RBCEVs are derived or obtained from mammalian red blood cells.

13. The preparation of claim 1, wherein the RBCEVs are isolated from a sample of human red blood cells.

14. The preparation of claim 1, wherein each RBCEV within the population is loaded with an average of at least 1.0 copy number of the DNA cargo, at least 2.0 copy numbers of the DNA cargo, at least 3.0 copy numbers of the DNA cargo, or at least 4.0 copy numbers of the DNA cargo.

15. The preparation of claim 1, wherein the cationic reagent is a polyethylenimine (PEI) reagent.

16. The preparation of claim 1, wherein the cationic reagent is a linear polyethylenimine hydrochloride (LPH) having a molecular weight of 25,000 Da or 40,000 Da.

17. The preparation of claim 1 for use in therapy.

18. A method of loading a population of RBCEVs with a DNA cargo having a length between 2,000 bases and 40,000 bases;

which method comprises steps of:

contacting the population of RBCEVs with a cationic reagent and the DNA cargo for a period of time sufficient for the DNA cargo to be loaded into RBCEVs of the population so that a loaded preparation is prepared.

19. The method of claim 18, wherein the RBCEVs have a size between 50 nm and 1,000 nm in diameter.

20. The method of claim 18, wherein the RBCEVs have a size between 100 nm and 300 nm in diameter.